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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WU, DOROTHY

ART UNIT

PAPER NUMBER

2697

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/359,523

Applicant(s)

ACHARYA ET AL.

Examiner

Dorothy Wu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____.

DETAILED ACTION

Response to Arguments

1. The applicant has argued: "the Examiner takes official notice, that it is well-known in the art to minimize the amount of computation performed when a camera is operating in a video real-time mode due to time constraints.'... Applicant hereby challenges the official notice and requests a reference by the Examiner to support the Examiner's contention." The provision of a reference has been supplied in the rejections for claims 4 and 11. See below.
2. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 8-10, 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura, U.S. Patent 4,335,397, in view of Takakura, U.S. Patent 6,421,083.

Regarding claim 1, Tamura teaches a method comprising: capturing an optical image to form raw data indicative of the optical image (col. 4, lines 6-8); using stored values (gain-control circuits 11R and 11B) to transform the raw data into transformed data indicative of a second image (col. 4, lines 14-20, 49-51; Fig. 1); computing a white color balance of the second image

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(col. 4, lines 21-35); and modifying the stored values (gain-control circuits **11R** and **11B**) based on the computed white color balance and the values (col. 4, lines 35-54). Tamura does not teach the use of look-up tables to store the correction values. Takakura does teach the use of look-up tables to store correction values (col. 4, lines 58-61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the use of look-up tables taught by Takakura with the practice of incrementing or decrementing correction values based upon stored and computed white balance values taught by Tamura to make a gradation correction device that stores white balance correction values in a look-up table and increments or decrements the stored values to finely adjust correction. One of ordinary skill would have been motivated to make such a modification to finely adjust correction values for different gradations through up/down counters.

Regarding claim 2, Tamura teaches repeating the using, computing, and modifying until the computed white color balance is at an acceptable level (col. 7, lines 27-37, and col. 8, lines 20-32).

Regarding claim 3, Tamura teaches repeating the using, computing, and modifying for a predetermined number of iterations (col. 7, lines 27-37, and col. 8, lines 20-32).

Regarding claims 8-10, because the methods of claims 1-3 are taught, the apparatuses corresponding to the methods are also taught.

Regarding claim 15, Tamura teaches an imaging device, which comprises a television camera (col. 1, lines 8-9).

Regarding claim 16, Tamura teaches an article comprising a storage medium (**ROM 32**) readable by a process-based system (**CPU 31**) that contains the program for performing the white

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balance (col. 5, lines 35-40). Tamura also teaches a method that uses values stored in a look-up table to transform raw data provided by an image sensor into transformed data that indicates an image, compute a white color balance of the image, and modify the values in the look-up table based on the computed white color balance and the values. See claim 1.

Regarding claim 17, Tamura teaches an article comprising a storage medium (ROM 32) readable by a process-based system (CPU 31) that contains the program for performing the white balance (col. 5, lines 35-40). Tamura teaches the repetition of the modification of the look-up table and computation of white color balance until the computed white color balance is at an acceptable level. See claim 2.

Regarding claim 18, Tamura teaches an article comprising a storage medium (ROM 32) readable by a process-based system (CPU 31) that contains the program for performing the white balance (col. 5, lines 35-40). Tamura teaches the repetition of the modification of the look-up table and computation of white color balance until the computed white color balance is performed a predetermined number of iterations. See claim 3.

4. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura, U.S. Patent 4,335,397, in view of Takakura, U.S. Patent 6,421,083, and further in view of Kato, U.S. Patent 6,148,031.

Regarding claim 4, Tamura in view of Takakura teach the method according to the limitations of claim 3. See above. Tamura teaches it is a simple matter to effect only coarse adjustment instead of effecting both coarse and fine adjustment (col. 9, lines 15-21). Tamura in view of Takakura do not teach that the number of iterations depends on whether the capturing is

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used to capture a still image or video. Kato teaches the allowability of extra computation when capturing still images and the desirability of minimizing computation when capturing video images (col. 1, lines 41-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the possibility of conducting either coarse or fine adjustment taught by Tamura in view of Takakura with the desirability of high still image quality and fast video image capture taught by Kato to make an apparatus that effects coarse adjustment for video images and fine adjustment for still images, which reads on the number of iterations depending upon the image capture mode. One of ordinary skill would have been motivated to make such a modification to achieve the best possible image quality in the amount of time allowable for each image, still or video, to be captured.

Regarding claim 11, because the method according to claim 4 is taught, the apparatus corresponding to the method is also taught.

5. Claims 5, 6, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura, U.S. Patent 4,335,397, in view of Takakura, U.S. Patent 6,421,083, and further in view of Thadani et al, U.S. Patent 6,201,530.

Regarding claim 5, Tamura in view of Takakura teach the method according to the limitations of claim 1. See above. Tamura in view of Takakura do not teach the step of modifying the transformed data to compensate for differences in response to the optical image between the image sensor and a human eye. Thadani et al teaches the step of performing color correction on data that has already been subjected to white balance correction to make the color more consistent with standard colors, which reads on modifying the transformed data to

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compensate for differences in response to the optical image between the image sensor and a human eye (col. 1, lines 39-41, and Fig. 1A). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to append to the method taught by Tamura in view of Takakura with the practice of performing color correction subsequent to white balance correction taught by Thadani to create a method that first performs white balance correction, and then color correction. One of ordinary skill would have been motivated to make such a modification to achieve an image of higher quality whose appearance closer resembles an object as perceived by the human eye.

Regarding claim 6, Thadani teaches the step of applying data already subjected to the color correction process to a color space conversion process, which reads on modifying the result of the modification of the transformed data to convert the result into a predetermined color space (col. 1, lines 18-20; Fig. 1A).

Regarding claims 12 and 13, because the methods according to claims 5 and 6 are taught, the apparatus corresponding to the method is also taught.

6. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura, U.S. Patent 4,335,397, in view of Takakura, U.S. Patent 6,421,083, and further in view of Sasaki et al, U.S. Patent 5,202,756.

Regarding claim 7, Tamura in view of Takakura teach the method according to the limitations of claim 1. See above. Tamura in view of Takakura do not teach the modifying of raw data to interpolate pixel color before the transformation. Sasaki et al does teach that the colored raw data is interpolated before it is subjected to white balance (col. 7, lines 51-57, col. 9, lines

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13-14, 49-51, and Fig. 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the practice of interpolation taught by Sasaki et al into the method taught by Tamura in view of Takakura to make a method wherein the raw data is interpolated before it is subjected to further signal processing. One of ordinary skill would have been motivated to make such a modification to improve the resolution of the data before pursuing further signal processing.

Regarding claim 14, because the method according to the limitations of claim 7 is taught, the apparatus corresponding to the method is also taught.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on 703-308-7644.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:


(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703)306-0377.



DW
September 8, 2003



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